



Illinois Department of Natural Resources

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Pat Quinn, Governor

Marc Miller, Acting Director

October 20, 2009

Mr. Phil Dick, Director
McLean County Department of Building and Zoning
Government Center
P.O. Box 2400
Bloomington, IL 61702-2400

**RE: Horizon Wind LLC Twin Groves Expansion McLean County
Endangered Species Consultation Program
Natural Heritage Database Review #1003164**

Dear Mr. Dick:

The Department has received a submission for this proposed action in McLean County for consultation in accordance with the *Illinois Endangered Species Protection Act* [520 ILCS 10/11], the *Illinois Natural Areas Preservation Act* [525 ILCS 30/17], and Title 17 *Illinois Administrative Code* Part 1075.

This consultation is terminated. However, due to the development in recent years of broader concerns for State-listed species related to large wind energy facilities, and more general concerns regarding their potential adverse effects to migratory birds and bats, the Department recommends the County consider requiring post-construction bird and bat use and mortality studies for this project. The specific concerns and recommendations are included in the attachment to this letter.

Should you need additional information regarding the consultation process, or should you have any questions, please do not hesitate to contact me.

Sincerely,

A handwritten signature in black ink, reading "Keith M. Shank". The signature is written in a cursive style with a large, stylized "K" and "S".

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cc: Caton Fenz, Horizon Wind LLC

Attachment

Horizon Wind LLC Twin Groves Energy Facility Expansion McLean County

Wildlife Impact Recommendations

McLean County may wish to consider permit conditions requiring the applicant to monitor, assess, and report possible fish and wildlife effects of the proposed action in the following ways.

- § Incorporate best management practices to minimize risk to federally-listed and state-listed species, as outlined in this Attachment. Focus should be on appropriate avoidance and minimization of habitat disturbance, with mitigation measures implemented as applicable.
- § Perform pre-construction assessments of avian and bat usage within the project area. Such assessments should include inventories of habitat types in and near the project area, including crop rotations or choices, and observations of both migratory and resident bird usage. Consideration of all seasons should be included, although spring migration is anticipated to be of greatest interest. Acoustic bat activity monitoring is also appropriate, particularly during the fall migratory season when activity would be expected to be highest. Specific federally-listed and state-listed species of interest are discussed in the following narrative. Risks to protected species should be evaluated and appropriate regulatory permits sought for potential incidental taking of protected animals.
- § Perform at least one year of post-construction monitoring and assessment, noting any changes in wildlife usage patterns and evaluating potential causes of such changes.
- § Consideration should be given to periodic repetition of the post-construction wildlife surveys during the life of the project.

Natural resources within, or in the vicinity of, the proposed wind energy facility are listed below, along with a discussion of potential issues.

Mackinaw River INAI Site

The Mackinaw River is a designated Illinois Natural Areas Inventory (INAI) Site from its headwaters to its mouth, for its high natural community diversity and because it provides essential habitat for State listed species. With the exception of a few small areas, nearly all of the project area drains to the Mackinaw River. The significant amount of land disturbance associated with construction of the project poses a threat to this system unless soil erosion and pollution are carefully controlled.

The Mackinaw River supports populations of the State-listed threatened Slippershell and Spike Mussels, as well as the State-listed endangered Lake Sturgeon, and may support populations of newly-listed species, such as the Smooth Softshell Turtle and the Mudpuppy.

Mervin Savanna Nature Preserve/Mackinaw River Land & Water Reserve

These adjacent parcels are located on either side of the Mackinaw River about 8 miles from the project area. It is possible that turbines may be visible from the margins of the Land & Water Reserve under favorable conditions. Otherwise impacts should be limited to indirect effects via the water quality of the Mackinaw River.

Funk's Grove INAI Site/Nature Preserve Complex

The Funk's Grove INAI Site, located about 15 miles southwest of the project footprint, encompasses a number of areas with varying degrees of protection under the *Illinois Natural Areas Preservation Act*. Protected areas include the **Thaddeus Stubblefield Grove Nature Preserve**, the **Stubblefield Woodlots Nature Preserve**, the **Funk's Grove Land & Water Reserve**, the **Sugar Grove Foundation-Funk's Grove Natural Heritage Landmark**, and the **Timber Creek INAI Site**. The area also supports populations of the State-listed threatened Kirtland's Snake and Slippershell Mussel.

Because this area is so distant from the project area, and due to topography and intervening development, the proposed wind energy facility is unlikely to adversely modify these resources in any way.

Weston Cemetery INAI Site and Nature Preserve

The five-acre Weston Cemetery Prairie is located just south of Weston, McLean County, about thirteen miles north of the project footprint, and is distant enough that it will be unaffected by any direct physical effects of the proposed action. However, it is possible that some wind turbines will be visible from the Nature Preserve under excellent atmospheric conditions. But at this range, they should not be intrusive.

Sibley Grove INAI Site and Nature Preserve

The 50-acre Sibley Grove Nature Preserve is located just southeast of Sibley, Ford County, outside of the footprint and five miles eastward, distant enough that it will be unaffected by direct effects of the proposed action. However, at this range, many turbines will be visible from the Nature Preserve. However, another wind energy facility is planned much closer to the Nature Preserve and the effects of this expansion will be negligible in comparison.

Sibley State Habitat Area

This 643-acre property of the Department of Natural Resources is located about three miles east-northeast of the project area, in Ford County. The SHA is undergoing grassland restoration, and provides breeding, wintering, and staging habitat for a number of migratory bird species, including Northern Harriers and Short-Eared Owls.

Saybrook State Habitat Area

This IDNR-owned and managed property exceeding 500 acres consists of several discrete parcels along Illinois Route 9, within and south of the proposed project footprint. These parcels support breeding Upland Sandpipers and Loggerhead Shrikes, and provide wintering habitat for other species, such as Northern Harriers and Short-Eared Owls. However, these parcels are already within or adjacent to Phase I and Phase II of the Twin Groves project; the addition of more turbines to the north is unlikely to appreciably increase effects within these parcels, but the addition of many more turbines may increase the risk that State-listed birds may be injured or killed at off-site turbines.

Perdueville State Habitat Area

The Department's 120-acre Perdueville SHA is located more than fourteen miles east-southeast of the project footprint. It supports significant numbers of breeding Henslow's Sparrows and provides a large expanse of suitable wintering habitat and migratory staging area attractive to other State-listed bird species.

Moraine View State Recreation Area

This 1,700-acre IDNR property is located about five miles south of the project. However, the park lies directly adjacent to Twin Groves Phase I, and expansion of the Twin Groves project northward should have no effects, physical or otherwise, on public use of this property.

Clinton Lake State Recreation Area

This major IDNR-managed recreation area is located more than 17 miles due south of the project area. Turbines in the expansion are will be on the opposite side of Twin Groves I and II, if they can be seen at all from the Recreation Area. Moreover, other wind energy projects are planned in DeWitt County directly adjacent to Clinton Lake SRA. Any effects of the Twin Groves facility will be negligible by comparison.

Funk's Grove State Natural Area

This 200-acre Department property is a part of the Funk's Grove INAI complex. It lies within the **Thaddeus Stubblefield Grove Nature Preserve**, which is slightly larger. Located 17 miles southwest of the project area, it supports a population of the State-listed

threatened Kirtland's Snake. But due to topography and intervening development, it is unlikely that project turbines will be visible to people in the Preserve even under the best of conditions. The project is unlikely to have any adverse effect on this parcel.

Documented Listed Species

Lake Sturgeon, *Acipenser fulvescens*

A Lake Sturgeon was taken by a fisherman from the tail water of Lake Bloomington in 2009, and at least one other fish of this species was seen at the time, demonstrating that this State-listed endangered species occurs in the Mackinaw River system. Its habitat is most likely to be adversely affected by sedimentation and siltation related to wind turbine construction.

Spike Mussel, *Elliptio dilatata*

The State-listed threatened Spike Mussel has been documented (2001) in the Mackinaw River in Woodford County, about 20 miles downstream of the project area. However, numerous diverse mussel beds are known from higher in the watershed which contain suitable habitat for this species; there is no reason to believe it does not occupy nearer reaches of the River.

The Spike is found in rivers and larger creeks in sand, gravel, and cobble substrates. The fish host(s) which support this species through its parasitic larval phase are not known. Like other mussels, it feeds on plankton and detritus filtered from the water column as the current passes by. Unlike many species of mussels, the Spike requires both high and low seasonal water temperatures to trigger spawning and glochidial release, so any factor which increases or decreases seasonal temperature ranges and the temperature extremes can be detrimental. Clearing riparian trees and installing or removing agricultural field tiles are examples of factors which can affect prevailing temperature regimes.

Siltation and sedimentation of the river bed are the main potential adverse effects associated with the construction and operation of a wind energy facility.

Slippershell Mussel, *Alasmidonta viridis*

The State-listed threatened Slippershell Mussel has been recently collected from numerous locations in McLean County from the watersheds of both the Mackinaw and Sangamon Rivers. This suggests that many streams which have not been investigated may support this species.

The Slippershell is a small (up to 1.5 inches) headwater species which can survive up to 30 days out of the water in the wet substrate of intermittent streams. Field tiles provide a constant source of cool water and the associated drainage ditches provide many miles of potential habitat. The identified larval host fishes are the Johnny Darter and the Mottled Sculpin, both small fish which ascend spring runs that may not flow year-round.

Wind farm construction may disrupt potential Slippershell habitat through increased siltation and sedimentation, through water pollution resulting from possible spills of fuel or other construction-related chemicals, and through disruption of field tile flows. If streams or drainage ditches are proposed to be altered, potential direct impact to the species or its habitat could occur.

Loggerhead Shrike, *Lanius ludovicianus*

The threatened Loggerhead Shrike is adapted to the savanna conditions of interspersed grasslands, shrubs, and trees. This species has been adversely affected by the decline in animal husbandry and the abandonment of the "shelter-belt" fence-row conservation practice, which has severely reduced both breeding and foraging habitat. The Shrike, also known as the "butcher bird," needs thorny trees and shrubs, even barbed wire, on which to impale its prey, which may be left for several days before being eaten. Areas which support large insects and small rodents, major food items, are also necessary. Due to losses of suitable habitat, Loggerhead Shrikes may attempt reproduction in trees near human habitations and in other areas where they would normally not be expected.

A recent documented Shrike breeding record (2007) exists within the project footprint, in Section 33 just north of Route 9, on an IDNR parcel which is part of the Saybrook State Habitat Area. A number of other recent records exist in McLean County, and this species is broadly distributed across the State.

The primary consideration for wind energy facilities is the potential for further loss of remaining Shrike habitat, if fence-rows are cleared to avoid wind turbulence or to improve turbine exposure, or if road-side trees are cleared to create turning radii for turbine carriers or to establish power lines. A pre-construction survey to identify the presence of Shrike nests should be conducted for areas with suitable habitat if work is proposed during the breeding season in order to avoid direct mortality. "Resident" foraging birds are not thought to be at significant risk from operating wind turbines, but potential risk associated with migrants should be considered.

Upland Sandpiper, *Bartramia longicauda*

This State-listed threatened grassland bird prefers habitat of short-grass prairie/pasture. For many years this ground-nesting species was thought to be area sensitive, requiring ten acres or more of grassland habitat for successful breeding. However, many recent breeding efforts are occurring in grassed waterways of row-crop fields, which provide considerably less than ten acres of habitat, and from along roadsides.

Recent breeding records (2009) for the Upland Sandpiper exist near Twin Groves turbines east of Arrowsmith, with 2005 records southwest of Lexington, indicating this species may be found across the County where suitable habitat exists.

The Upland Sandpiper engages in an aerial courtship display which passes through the rotor-swept elevations of utility-scale wind turbines, placing it at risk of collision mortality. Whether this species will be sensitive to the proximity of vertical structures, or to shadow "flicker" on potential nesting areas, has not been demonstrated, but such shadows may prove to be an issue. Some photographs of this species were obtained in 2008 at locations just over a mile from existing wind turbines, suggesting that visibility and motion at that distance may not be an issue.

The Department recommends mapping all habitat types within the project footprint, and checking even relatively small areas of appropriate habitats for the presence of this species prior to any initiation of construction disturbance during the breeding season.

Least Bittern, *Ixobrychus exilis*

This small heron nests in the emergent vegetation of marshes and water-body edges. It has been documented (2009) from an artificial lake on the west side of Bloomington, about eight miles west of the project footprint.

Known breeding locations are unlikely to be affected by the project, although there may be a collision risk for migrating Bitterns. Generally speaking, waterfowl are rarely the victims of collisions with wind turbines, so this risk may be low.

Henslow's Sparrow, *Ammodramus henslowii*

The Henslow's Sparrow is listed by Illinois as a threatened species, but is scheduled for de-listing late in 2009. Breeding populations of this grassland bird have been documented in LaSalle and Ford Counties, and in northern and in northwestern McLean County, and may occur within the project area where suitable habitat exists, or as a migrant.

As a breeding bird, the Henslow's Sparrow is area-sensitive, requiring minimum amounts of contiguous habitat. It is sensitive to and avoids vertical structures and habitat openings, such as roads and trails, which fragment habitat. Wind turbines have the potential to fragment otherwise suitable habitat, exclude or displace breeding birds from suitable habitat, and to kill or injure birds through blade-strike. The response of this species to the presence of distant, yet visible, wind turbines has yet to be documented.

Franklin's Ground Squirrel, *Spermophilus franklinii*

This species has been documented (2004) in the remnant prairies running along I-55, Old Route 66, and the railroad south of the Mackinaw River. The State's largest ground squirrel was listed as "threatened" in 2004. Most active above-ground on sunny days in late spring and early summer, this species hibernates for seven to nine months of the year. It prefers taller vegetation than other ground squirrels, and so is seldom seen. Well-drained ground is a requisite, so today this species is most often found along railroads and highways where its requirements for food and shelter are satisfied. Though there may

appear to be no suitable habitat within the project footprint, the species may persist in isolated pockets, such as rural cemeteries. Such a location was identified at a farmstead in Ford County in 2008.

Offspring can disperse up to a mile in their first season. If present, this species can be threatened during construction through the crushing and collapse of its burrows by heavy equipment. Shadow flicker cast in its territory by operating turbines may also be detrimental.

Potentially Present Listed Species

Barn Owl, *Tyto alba*

This endangered raptor nests in larger tree cavities and in barns or abandoned buildings, sometimes within city limits. A breeding record exists for Ford County(1990) west of Melvin about seven miles from the County Line; another record exists for Champaign County (2005) about 15 miles southeast of the project footprint; none have been recorded from McLean County since the species was listed. This owl hunts both open woodlands and grasslands; its preferred prey consists of small rodents such as mice and voles. The main risk posed by wind power facilities to this species is the removal of suitable nesting trees and abandoned buildings to facilitate transportation of wind turbine components or to maximize wind energy conversion. Both trees and buildings should be examined for Barn Owl occupancy prior to removal.

Short-Eared Owl, *Asio flammeus*

The endangered Short-Eared Owl nests and winters in grasslands and wetlands. McLean County lies within both breeding and wintering ranges, although breeding Short-Eared Owls have not been reported in McLean County since they were listed. However, significant numbers of wintering owls have been observed in suitable winter habitat in McLean, and Ford Counties.

Highly nomadic, the Short-Eared owl depends heavily on vole and mouse populations, and the size of its breeding and hunting territories varies inversely with prey population sizes. When prey populations are high, owls may be ground-roosting every few meters in suitable habitat. The Northern Harrier (also listed, see below) often harasses this Owl, stealing its food.

This Owl's hunting flights are often less than ten feet off the ground (a circumstance which makes this bird highly vulnerable to collisions with vehicles); during aerial mating rituals, flights occur at typical wind turbine rotor-swept height. This Owl is highly dependent on its acute hearing to locate and seize prey. The degree to which noise from wind turbines may interfere with predation behavior is unknown.

The effects of wind turbines on Short-Eared Owls may be heavily influenced by the proximity of turbines to breeding, roosting, and hunting areas. Once turbines are built,

this proximity relationship will be subject to change as land owners alter land management practices. This is likely to be of concern mainly if attractive habitat for Owls and their prey is created within or near the turbine array following construction. The component parcels of the Saybrook State Habitat Area may supply such habitat.

Northern Harrier, *Circus cyaneus*

The State-listed endangered Northern Harrier (sometimes called the Marsh Hawk) is a ground-nesting grassland hawk. It has not been recently documented as nesting in McLean County, but is a frequently-observed migrant. The nearest breeding record (1994) is in Champaign County north of Rantoul, about 18 miles distant. The species has a statewide range. While many sources indicate the species needs large open areas of habitat, Illinois studies have demonstrated this hawk can use relatively small patches of habitat for successful breeding, especially in the vicinity of larger habitats. Breeding is often associated with wetlands such as marshes, sedge meadows, and wet prairies.

While most hunting activities occur at fairly low altitudes, below typical rotor-swept elevations, hunting can expose this bird to collision risk. Like the Upland Sandpiper, this species engages in an aerial courtship display which places it at risk of collision with wind turbines. Wind farm construction and operation may alter concentrations of prey species.

This hawk relies heavily on its acute hearing to locate prey, and--if the noise generated by wind turbines interferes with this function (which is not known to be the case)--turbines might adversely affect their ability to hunt near the turbines, reducing available food resources.

Although this hawk typically flies at low altitudes while hunting, a percentage of flights do occur at elevations where turbine rotors could present a collision threat. If pre-construction surveys indicate use of the project area by migrant Harriers, post-construction surveys should be performed to determine whether the Harrier continues to hunt territories in proximity to turbines. If so, the risk of taking should be carefully evaluated.

Bald Eagle, *Haliaeetus leucocephalus*

This species is not known to breed in McLean County, but may occur as a migrant. Though currently listed by Illinois as "threatened," the Bald Eagle is scheduled for de-listing late in 2009. However, it will remain protected by two federal laws: the *Migratory Bird Treaty Act* and the *Bald and Golden Eagle Protection Act*.

The nearest breeding record is at Clinton Lake in DeWitt County, more than 20 miles distant. Except for areas along the Mackinaw River, Livingston County lacks suitable breeding habitat. An ill Bald Eagle was collected by IDNR staff east of Paxton, Ford County, in 1997. The Department lacks sufficient data about migration routes and

behavior for this species to estimate the frequency with which they may occur in the project area during migration

Osprey, *Pandion haliaetus*

There are no breeding records for this Illinois-listed endangered species in McLean County. However, an injured juvenile Osprey was recovered in proximity to a wind turbine in McLean County in the Fall of 2007 and presumably was injured while attempting to perch on the machine (a number of current Osprey nests in Northern Illinois occur on manmade structures). This incident appears to indicate that Ospreys migrate through McLean County, and highlights the risk that wind turbines pose to migrating listed species, although it remains impossible to predict or quantify such risks.

Newly-Listed Species

Smooth Softshell Turtle, *Apalone mutica*

The Board has recommended listing the Smooth Softshell as "endangered;" this designation is pending the completion of rulemaking, which should be accomplished in 2009.

This aquatic turtle inhabits larger streams and rivers, in segments with sandy substrates and sand bars. Regarded as a delicacy by many fishermen, this species has suffered from over-collecting, while pollution, siltation, and sedimentation have degraded many habitats. This species may be present in the Mackinaw River system.

Unless transportation of wind turbine components requires the upgrade or reconstruction of bridges, there should be little risk of direct adverse effects to this species. Erosion and siltation pose indirect threats.

Mudpuppy, *Necturus maculosus*

This large (up to one foot total length) salamander has been recommended by the Board for listing as "threatened;" this designation is pending the completion of rulemaking, which should be accomplished in 2009. The Mudpuppy is the only known glochidial host of the State-listed endangered **Salamander Mussel**, *Simpsonaias ambigua*, a species which is now being evaluated for federal listing under the Endangered Species Act; the decline of the Mudpuppy may be a major factor in the disappearance of the Salamander Mussel.

The Mudpuppy never develops beyond an aquatic larval stage, and so is never found in terrestrial habitats. It inhabits clear rivers, creeks, streams, lakes, and ponds, but conceals itself under rocks or woody debris during the day, feeding actively at night. It typically goes unseen except by fishermen, who sometimes inadvertently catch it. It can cope with some siltation and sedimentation so long as clear gravelly headwater areas remain

available for reproduction. The Mackinaw River system may well support a population of this species, and a presumption of its presence is warranted.

Cool or cold water is essential for this species, which remains active all winter; water temperatures above 72°F are harmful, and those above 77°F can be fatal. Agricultural tile drainage helps lower and maintain stream temperatures, but the removal of riparian trees and shrubs exposes streams to direct solar radiation and heating. In-stream cover provided by rocks and woody debris is essential for concealment and reproduction, since eggs are suspended from the bottoms of rocks and logs. The common belief that removal of woody debris from stream channels improves drainage is a factor in the decline of this--and many other-- species.

Major threats include pollution, siltation and sedimentation, stream channelization, and woody debris removal. The main risks associated with wind energy projects will be direct stream modification through the repair or upgrade of roads, modification of aquatic thermal regimes through the disruption of agricultural tile drainage systems, and siltation and sedimentation associated with construction and permanent features, such as service roads, which suppresses prey populations and renders spawning areas unsuitable. Any planned in-stream work may require an Incidental Take Authorization.

Ornate Box Turtle, *Terrapene ornata*

The Board has recommended listing the Ornate Box Turtle as "threatened;" this designation is pending the completion of rulemaking, which should be accomplished in 2009.

This terrestrial turtle is usually found in open grassland areas, in contrast to its cousin, the Eastern Box Turtle, which is usually found in woodlands. This turtle hibernates underground from late September through April, so it cannot evade disturbance during that period. Its carapace carries elaborate markings, including a yellow bar along the spine, which distinguishes it from the other species. While it appears to be more common in sandy soils, it is not restricted to them.

As with many turtles, road-kill and over-collecting are major causes of decline. In a recent study of a northwestern Illinois population, a significant number of individuals exhibited carapace scarring from farming equipment (discs and harrows), illustrating that this species may frequently be found in rowcrop fields.

Preferred habitat of this species may not be present in the project area, but too little is known of this species' current distribution to rule out its presence. Project workers should be educated as to its appearance and habits, remain alert for turtles on roads and in fields, and report any suspected Ornate Box Turtles to supervisors. The Department of Natural Resources should be promptly notified if any Ornate Box Turtles are identified. Once listed, it will be unlawful to move or capture an Ornate Box turtle to facilitate the project without first obtaining an Incidental Take Authorization from the Department.

Black-Billed Cuckoo, *Coccyzus erythrophthalmus*

The Black-Billed Cuckoo has been recommended by the Board to be listed as "threatened," and this listing is pending the completion of administrative rulemaking, which should occur in 2009.

This bird nests in interior thickets of forested tracts and feeds heavily on caterpillars. McLean County has thousands of acres of suitable nesting habitat along its streams and rivers, although the Department currently has little readily available information about this species in McLean County. This species is not directly threatened by wind turbine construction or operation, but may be subject to collision risk as a migrant.

Bats

Indiana Bat, *Myotis sodalis*.

No collections or captures of this bat are known from McLean County. Summer nursery colonies of this bat, listed by the federal government and Illinois as endangered, have been documented in forested riparian tracts along the Middle Fork of the Vermilion River (Wabash Drainage) and the Big Four Ditch in Ford County. Nursing females may forage above crop-fields a mile or more from the nursery colony. This species winters in caves or mines some distance from summer habitats, but its migratory behavior is poorly understood. No hibernation sites are known from McLean County, although critical hibernating habitat is known in LaSalle County at the Blackball Mine near Peru.

The risk to bats from collisions with moving wind turbine blades appears to be several times higher than for birds. To date, no Indiana Bats have been documented as killed by wind turbines. But, until recently, no utility-scale wind farms have been proposed or constructed within the range of Indiana Bats, so the risk to this species from wind turbines remains unquantified.

Potential summer nursery or roosting habitat for the Indiana Bat exists along the Mackinaw River. Individuals roosting in these areas may forage above fields within the project area. The greatest risk may be to Indiana Bats migrating across or through the project area. Efforts to identify and monitor the foraging and migration behavior of bats in the project area may establish the degree of risk which this facility could pose to this species.

The Department rates the potential for an incidental take of an Indiana Bat at this facility as low, but cannot rule it out. More common bat species undoubtedly occupy habitats in the vicinity, and are probably at risk of mortality, directly through collisions with wind turbines, or indirectly through baro-trauma (lung hemorrhages caused by extremely low air pressures in the vortices created by wind turbine vanes).

It is recommended that an Anabat detector survey be conducted, particularly during the fall bat migratory season (August 1 through October 31) when activity would be expected

to be the highest, in order to characterize bat activity in the project area. High frequency bat signals could indicate the presence of the Indiana Bat in the vicinity, and a high level of bat activity may warrant post-construction mortality studies.

Migratory Birds

American Golden Plover, *Pluvialis dominica*

This migratory bird breeds in the Arctic tundra, migrates south along the Atlantic seaboard to South America in the winter, but returns northward through central North America. Areas of Illinois and Indiana provide important spring migration staging areas, which may be occupied by this species for a month or more while birds go through a molt before resuming migration. It has become a species of concern due to its relatively low global population estimate of around 300,000 birds.

Based on 25 years of Spring Bird Count data, it is likely that significant numbers of this species congregate in McLean County, within or adjacent to the project footprint. Because large operating wind energy facilities already exist or are currently under construction in Livingston and neighboring Counties, it is possible Plovers which usually stage elsewhere may be displaced into McLean County. Large numbers of this species are routinely observed south of Sibley Grove in Ford County. Pre- and post-construction surveys should be performed to observe this species.

Plovers tend to aggregate in dense concentrations, and are known to fly in large tight groups through the approximate rotor-swept elevation, which may expose them to collision mortality risk. Concerns also exist pertaining to habitat fragmentation by service roads, and displacement from habitat due to potential sensitivity to vertical structures and human activity.

A research project has begun in an effort to better understand the behavior and needs of this species, as well as how it may be affected by the presence of wind turbines. Some preliminary results were recently published [O'Neal, *et. al.* (2008)] .

One apparent finding is that the species definitely concentrates in a few areas, rather than being generally dispersed across suitable habitat, resulting in temporarily dense population "hot-spots." However, where these may be located may be influenced year-to-year by poorly understood climatic cues. Very few birds appeared in 2008 in the expected concentration areas; instead, major concentrations were found more than one hundred miles to the south. Anecdotal evidence indicates this is an unusual occurrence.

A number of observers had reported a daytime habitat preference for short grass, soybean stubble, or bare ground with standing water or residual moisture, but O'Neal first reported a night roost preference for standing corn stubble cover, with crepuscular movement between the two. O'Neal reported all observations of Plovers were located more than 70 meters from adjacent roads, suggesting an intolerance for breaks in habitat. (Effects of traffic were not investigated.) Interestingly, O'Neal also reported several observations of

predation of the Golden Plover by the Northern Harrier, suggesting that species may follow large flocks of Plovers.

Whooping Crane, *Grus americana*

An experimental population, now over 100 individuals in number, of the federally-listed endangered Whooping Crane has been established with breeding grounds in Wisconsin and wintering areas in Florida. Spring and Fall migrations take these very large birds through Illinois. Whooping Cranes often "stop over" during migration and this may occur virtually anywhere in the State.

Part of the "experimental" aspect of the Eastern Migratory Flock of Whooping Cranes is the use of ultra-light aircraft to teach captive-bred Crane chicks the migration route to Florida. In the past, this route avoided McLean County, but in 2008 the route was shifted westward, and now passes directly through McLean County. In 2008, one of the 14 young birds refused to fly over a wind energy facility in McLean County at an elevation of 2,500 feet, and had to be led around. This suggests that, for a segment of the Whooping Crane population, the sight of wind turbines could pose an issue during migration. In the Spring of 2009, a Whooping Crane met its demise near Kappa in McLean County, although the cause of its injuries could not be determined.

During "stop-overs," which may last several days or weeks, cranes often forage on waste corn in nearby agricultural fields, and seldom rise to high altitudes when doing so. Wind turbines and associated power lines pose a collision risk for these large birds, which require some distance to achieve safe altitudes. Most non-predation losses to this flock have been to power line collisions, presumably during foraging activities, or when arriving or departing roosting areas.

Due to the extremely high public profile of the Whooping Crane, the Department suggests the developer/operator of this particular facility coordinate at least annually with the Whooping Crane Eastern Partnership (www.bringbackthecranes.org) to track the passage of Whooping Cranes through the vicinity, and explore additional measures to reduce potential losses of these birds..